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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
| 10/723,480 | 11/26/2003 | Richard A. Golding | ARC920030082US1 | 7942 |
| 29154 7590 01/25/2007 FREDERICK W. GIBB, III GIBB INTELLECTUAL PROPERTY LAW FIRM, LLC 2568-A RIVA ROAD SUITE 304 ANNAPOLIS, MD 21401 | | | EXAMINER BRADLEY, MATTHEW A | |
| | | | ART UNIT 2187 | PAPER NUMBER |
| SHORTENED STATUTORY PERIOD OF RESPONSE | | | MAIL DATE | DELIVERY MODE |
| 3 MONTHS | | | 01/25/2007 | PAPER |

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

| | | | |
|------------------------------|-----------------|---------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/723,480 | GOLDING, RICHARD A. | |
| | Examiner | Art Unit | |
| | Matthew Bradley | 2187 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 November 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-40 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-40 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 1 November 2006 has been entered.

Claim Status

Claims 1-40 remain pending and are ready for examination.

Claim Objections

Claim 1 is objected to because of the following informalities:

- Claim 1 line 6 recites, 'said first object storage device.' The Examiner recommends inserting 'a first' in place of 'an' in line 3 to ensure proper antecedent basis. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-40 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

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As currently amended, independent claims 1, 14, 27, and 40, recite converting of a variably sized object as the variably sized object ***changes in size*** wherein said step of converting occurs ***when a size*** of said variably sized object ***remains dormant*** for a predetermined period of time. This is indefinite. The Examiner is unsure of how to interpret the contradicting limitations. If it is applicant's intent for the converting to occur as the object changes in size, then it must be clearly and unambiguously stated. If it is applicant's intent for the converting to occur when the size of the object remains dormant, then it must be clearly and unambiguously stated. For purposes of examination, the Examiner is interpreting applicants to have only meant converting the object when the object has remained dormant for a period of time as the instant amendments appear to imply. Any claim not specifically addressed is rejected at least by virtue of its dependency.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims **1-2, 6-8, 10-11, 14-15, 19-21, 23-24, 27-28, 32-34, 36-37, and 40** are rejected under 35 U.S.C. 102(b) as being anticipated by DeKoning (U.S. 6,275,898), hereinafter referred to as DeKoning. The instant 35 U.S.C. 102 (b) rejections are made in light of the 35 U.S.C. 112 rejections made supra.

As per independent claim 1, Dekoning teach,

- storing a variably sized object capable of changing a number of bytes of data included therein in an object storage device, wherein said variably sized object experiences a period of changing size followed by a period of having a stable size; (Column 9 line 58 to Column 10 line 14).
- temporarily storing a duplicate of said variably sized object in a second object storage device separate from said first object storage device; (Column 9 line 61). *The Examiner notes that the data files is initially stored in a RAID-1 and thus a duplicate is stored as per RAID-1 specifications.*
- converting said variably sized object into any of a grouped object Redundant Array of Independent Disks (RAID) layout and an individual RAID layout as said variably sized object changes in size, wherein said step of converting occurs when a size of said variably sized object remains dormant for a predetermined period of time; and (Column 10 lines 40-56). *The Examiner notes that the system of DeKoning initially stores an object of 20 MB in a RAID 1 configuration. The system converts the object to RAID 5 based on access, and the system then frees up 5 MB. Thus, the system of DeKoning converts the object as the object has remained dormant in size at 20MB in RAID 1.*
- discarding the duplicate variably sized object (Column 10 lines 40-56). *The Examiner notes that as the system converts from mirrored to parity,*

the system no longer maintains a duplicate and thus discards the duplicate that was present during the RAID 1 configuration.

As per independent claim **14**, DeKoning teach,

- storing a variably sized object capable of changing sizes in a first object storage system; wherein said variably sized object is independent of any other object, and wherein a size of said variably sized object initially remains stable followed by a period of changing sizes followed by a period of being stable (Column 9 line 58 to Column 10 line 14).
- mirroring said variably sized object; temporarily storing the mirrored variably sized object in a second object storage system separate from said first object storage device; (Column 9 line 61). *The Examiner notes that the data files is initially stored in a RAID-1 and thus a duplicate is stored as per RAID-1 specifications.*
- converting said variably sized object into any of a grouped object Redundant Array of Independent Disks (RAID) layout and an individual RAID layout upon growth of said variably sized object, wherein said step of converting occurs when a size of said variably sized object remains dormant for a predetermined period of time; and (Column 10 lines 40-56). *The Examiner notes that the system of DeKoning initially stores an object of 20 MB in a RAID 1 configuration. The system converts the object to RAID 5 based on access, and the system then frees up 5 MB. Thus, the*

system of DeKoning converts the object as the object has remained dormant in size at 20MB in RAID 1.

- discarding the mirrored variably sized object (Column 10 lines 40-56).

The Examiner notes that as the system converts from mirrored to parity, the system no longer maintains a duplicate and thus discards the duplicate that was present during the RAID 1 configuration.

As per independent claim 27, DeKoning teach,

- a set of object storage devices; (Figure 1 as taught in Column 5 lines 53-63) .
- a variably sized object capable of changing a number of bytes of data included therein in a first object storage device, wherein said variably sized object experiences a period of changing size followed by a period of having a stable size; (Figure 1 with respect to the partitions as taught in Column 9 line 58 to Column 10 line 14).
- a redundancy data management controller operable for duplicating said variably sized object; (Column 9 line 61). *The Examiner notes that the data files is initially stored in a RAID-1 and thus a duplicate is stored as per RAID-1 specifications.*
- a second object storage device separate from said first object storage device and operable for temporarily storing the duplicated variably sized object; (Column 9 line 61). *The Examiner notes that the data files is*

initially stored in a RAID-1 and thus a duplicate is stored as per RAID-1 specifications.

- a data converter operable for converting said variably sized object into any of a grouped object Redundant Array of Independent Disks (RAID) layout and an individual RAID layout when said object changes in size, wherein said converting occurs when a size of said variably sized object remains dormant for a predetermined period of time; and (Column 10 lines 40-56).

The Examiner notes that the system of DeKoning initially stores an object of 20 MB in a RAID 1 configuration. The system converts the object to RAID 5 based on access, and the system then frees up 5 MB. Thus, the system of DeKoning converts the object as the object has remained dormant in size at 20MB in RAID 1.

- a data purger operable for discarding the duplicated variably sized object (Column 10 lines 40-56). *The Examiner notes that as the system converts from mirrored to parity, the system no longer maintains a duplicate and thus discards the duplicate that was present during the RAID 1 configuration.*

Claim 40 is interpreted under 35 U.S.C. 112, 6th paragraph.

The Court of Appeals for the Federal Circuit, in its en banc decision *In re Donaldson Co.*, 16 F.3d 1189, 29 USPQ2d 1845 (Fed. Cir. 1994), decided that a "means-or-step-plus-function" limitation should be interpreted in a manner different than patent examining practice had previously dictated. The Donaldson decision affects only the manner in which the scope of a "means or step plus function" limitation in accordance with 35 U.S.C. 112, sixth paragraph, is interpreted during examination. Donaldson does not directly affect the manner in which any other section of the patent statutes is interpreted or applied.

When making a determination of patentability under 35 U.S.C. 102 or 103, past practice was to interpret a "means or step plus function" limitation by giving it the "broadest reasonable interpretation." Under the PTO's long-standing practice this meant interpreting such a limitation as reading on any prior

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art means or step which performed the function specified in the claim without regard for whether the prior art means or step was equivalent to the corresponding structure, material or acts described in the specification. However, in *Donaldson*, the Federal Circuit stated:

Per our holding, the "broadest reasonable interpretation" that an examiner may give means-plus-function language is that statutorily mandated in paragraph six. Accordingly, the PTO may not disregard the structure disclosed in the specification corresponding to such language when rendering a patentability determination. (MPEP 2181)

Accordingly, the Examiner notes that the means or system/structure for practice of the invention disclosed in paragraph 0035 of applicant's specification is further taught in DeKoning in Column 5 lines 53-63.

As per independent claim 40, DeKoning teach,

- means for storing a variably sized object in a first object storage system;
(Figure 1 as taught in Column 5 lines 53-63).
- means for mirroring said object; (Column 9 line 61). *The Examiner notes that the data files is initially stored in a RAID-1 and thus a duplicate is stored as per RAID-1 specifications.*
- means for temporarily storing the mirrored object in a second object storage system separate from said first object storage system; (Column 9 line 61). *The Examiner notes that the data files is initially stored in a RAID-1 and thus a duplicate is stored as per RAID-1 specifications.*
- means for converting said object into any of a grouped object Redundant Array of Independent Disks (RAID) layout and an individual RAID layout upon growth of said object, herein said converting occurs when a size of said variably sized object remains dormant for a predetermined period of time; and (Column 10 lines 40-56). *The Examiner notes that the system of DeKoning initially stores an object of 20 MB in a RAID 1 configuration.*

The system converts the object to RAID 5 based on access, and the system then frees up 5 MB. Thus, the system of DeKoning converts the object as the object has remained dormant in size at 20MB in RAID 1.

- means for discarding the mirrored object (Column 10 lines 40-56). *The Examiner notes that as the system converts from mirrored to parity, the system no longer maintains a duplicate and thus discards the duplicate that was present during the RAID 1 configuration.*

As per dependent claims **2**, **15**, and **28** DeKoning teach, determining which of said grouped object RAID layout or individual RAID layout to convert said variably sized object into based on a size of the variably sized object being converted (Column 10 lines 4-14).

As per dependent claims **6**, **19**, and **32** DeKoning teach, wherein said RAID layout comprises any of a RAID 5, a RAID 6, and a striped RAID layout (Column 10 lines 4-14).

As per dependent claims **7**, **20**, and **33** DeKoning teach, wherein said step of converting occurs when a predetermined number of variably sized objects have been duplicated (Column 10 lines 40-56). *The Examiner notes that the converting occurs as the data file remains dormant. Thus, a predetermined number, in this case one data file, has been duplicated anticipating the instant limitation.*

As per dependent claims **8**, **21**, and **34** DeKoning teach, wherein said step of converting occurs when said storage devices reach a limit on storage space (Column 7 lines 3-9).

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As per dependent claim **10, 23, and 36** DeKoning teach, wherein said step of converting to a grouped object RAID layout further comprises forming a group of similarly sized objects in said grouped object RAID layout (Column 10 lines 40-56).

As per dependent claim **11, 24, and 37** DeKoning teach, wherein said similarly sized objects comprise variably sized objects (Column 10 lines 40-56).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims **3-5, 9, 12-13, 16-18, 22, 25-26, 29-31, 35, and 38-39** are rejected under 35 U.S.C. 103(a) as being unpatentable over DeKoning in view of Jacobson et al (U.S. 5,392,244) hereinafter referred to as Jacobson. The instant 35 U.S.C. 103 (a) rejections are made in light of the 35 U.S.C. 112 rejections made supra.

As per dependent claims **3, 16, and 29**, DeKoning teach the limitations as noted supra.

DeKoning does not explicitly teach the converted data object being integrated into a group of similarly sized objects.

Jacobson teach, selecting a group based on whether said group comprises other objects similarly sized to said variably sized object (Column 4 lines 39-42).

DeKoning and Jacobson are analogous art because they are from the same field of endeavor, namely data converting from one storage scheme to another storage scheme.

At the time of the invention it would have been obvious to one of ordinary skill in the art, having both the teachings of DeKoning and Jacobson before him/her, to combine the grouping features of Jacobson into the system of DeKoning for the benefit of maintaining objects in a group independent of the selected redundancy scheme for redundancy benefits as well as performance benefits.

The motivation for doing so would have been that, the RAID management system effectively "tunes" the storage resources of a memory system according to the application or user requirements ... (Column 5 lines 8-11 of Jacobson).

Therefore, it would have been obvious to combine DeKoning with Jacobson for the benefit of maintaining objects in a group independent of the selected redundancy scheme for redundancy benefits as well as performance benefits to obtain the invention as specified in claims 3-5, 9, 12-13, 16-18, 22, 25-26, 29-31, 35, and 38-39.

As per dependent claim **4**, **17**, and **30** the combination of DeKoning and Jacobson teach, wherein the similarly sized objects comprise variably sized objects capable of changing a number of bytes of data included therein (Figure 1 with respect to the partitions as taught in Column 9 line 58 to Column 10 line 14 of DeKoning).

As per dependent claim **5**, **18**, and **31** the combination of DeKoning and Jacobson teach, further comprising recomputing a parity of said group to include said variably sized object (Column 8 lines 15-20 of Jacobson).

As per dependent claim **9, 22, and 35** the combination of DeKoning and Jacobson teach, wherein said step of converting occurs only when a size of said variably sized object remains dormant for a predetermined period of time (Column 10 lines 40-56 of DeKoning).

As per dependent claim **12, 25, and 38** the combination of DeKoning and Jacobson teach, further comprising removing the converted variably sized object from said grouped object RAID layout (Column 5 lines 8-22 of Jacobson).

As per dependent claim **13, 26, and 39** the combination of DeKoning and Jacobson teach, further comprising duplicating said converted variably sized object (Column 5 lines 8-22 of Jacobson). *The Examiner notes that as discussed supra, the system converts from mirrored storage to parity storage. The system can also convert from parity storage to mirrored storage. In an embodiment where data is often accessed frequently and then accessed less frequently but needed again, the system of Jacobson allows for the data to be converted from mirrored storage to parity storage back to mirrored storage. Accordingly, the system of Jacobson teaches the instant limitation as converting data from mirrored to parity back to mirrored thereby duplicating the converted object (data).*

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew Bradley whose telephone number is (571) 272-8575. The examiner can normally be reached on 6:30-3:00 M-F.

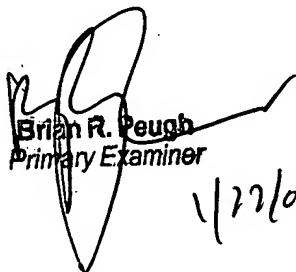
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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Donald A. Sparks can be reached on (571) 272-4201. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

BRP/mb

mb


Brian R. Peugh
Primary Examiner
1/22/07